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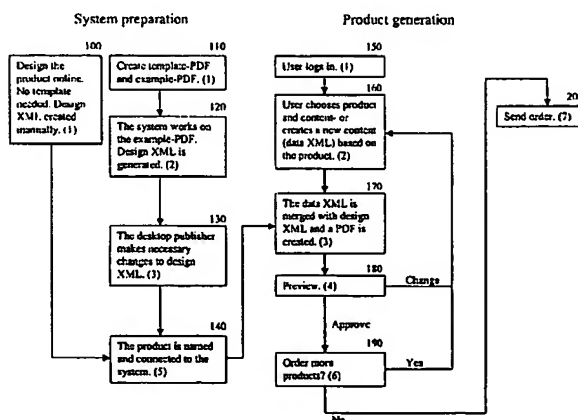
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A METHOD AND A SYSTEM FOR CREATING AND ORDERING CUSTOMIZED PRINTING MATERIAL ON-LINE A NETWORK FOR DATA-COMMUNICATION



(57) Abstract: The present invention relates to a method and a system for online creation and ordering of customized material for printing, where each customer at front end, through a computerized interface, participates in the process of creating, editing, proof printing and finally ordering print-ready files through Internet, via a printing service provider which automates the production of the print-ready files, and where print shops carefully chosen by the printing service provider automatically receives the print-ready files directly into their printing press. A PDF engine uses two XML files to create a customer PDF document for printing on demand. One XML file, the data XML file, comprises the data and it's typing for printing, and is created by the customer through the computerized interface. The second XML file, design XML file, comprises a description of how said data can be positioned and formatted, in a created document by the customer through said interface. The PDF engine generates the print-ready document through providing a new structure by analyzing the two XML files, while analyzing merging data and formatting information, thus making it possible to create a PDF document with a distinct difference between data to be printed and the design of the PDF document.

A method and a system for creating and ordering customized printing material on-line a network for data-communication.

Technical field

The present invention pertains to a method and a system for allowing a customer to a
5 printing service provider to create a PDF document at the site of the customer through a
computerized interface and sending the PDF document to the service provider through a
network for data-communication, whereby the service provider directs the PDF document to a
suitable printing office through a network for data-communication.

10

Background art

As most service providers of today are experiencing the markets ever-growing
demand for better service, speed and flexibility, it is important also for printing service
providers to be able to mix ever-faster services with total/optimal flexibility, to a customer
wanting customised printed products at low costs and on short notice, for the printing service
15 providers to be competitive now and in the future.

Many different kinds of businesses and organisations are dependent on a continuous
updating/customising of their printed material including: national and regional retail chains
wanting to update their point of sale displays, event planners and promoters needing material
for promoting different events, as well as every small to major business requiring company
20 designed stationary, business cards, envelopes, letterheads and/or business forms, regulated
by the company's graphic profile.

Formerly printing orders were manually sent to commercial printing services, like
print shops, having its product going through the stages of: typesetting and proofing, changes
to proof, corrections and proofing, customer approval and print production before final
25 delivery and payment. The product was then sent back and forth a couple of times between
customer and print shop, which was both time consuming, inflexible and demanded quite a lot
of administrative work.

The graphic arts industry is however gradually shifting from analogue to digital
techniques, ever so slowly due to the fragmentation of the printing industry. Processes are
30 being simplified through the use of computers, graphic arts equipment and the Internet, which
brings about that information flows between customer and print shop can be rationalised and
costs reduced.

Some modern printing systems already allows a user to customise printed material on
the Internet using template formats, stored reference information and user input data.

The document WO 98/08176 for example shows a system for creating and proofing customised printed material utilising dynamic Portable Document Format (PDF) technology before printing on a production printing system. A user connects to an Internet web site provided by a commercial printing service where he/she then selects from a plurality of available templates for the printed material. Additional pre-stored information to be included can also be selected or the user can input variable information through a keyboard or the like.

The system according to the WO document has some drawbacks in that it does not use PDF through all points of the workflow, which means that the service provider always must have access to a database containing high-resolution images and fonts. Their solution is therefore not stand-alone. They are also further limited, to sending print orders only to service providers connected to their system.

Yet another disadvantage is the fact that the printable matter created with this system is totally template based. The templates are created with a desktop publishing program, most likely "off-line" outside of the actual system presented, a fact which adds on to the inflexibility of this system.

Summary of the disclosed invention

The present invention relates to a method and a system for online creation and ordering of customised material for printing, where each customer at front end, through a computerized interface, participates in the process of creating, editing, proof printing and finally ordering print-ready files through Internet, via a printing service provider which automates the production of the print-ready files, and where print shops carefully chosen by the printing service provider automatically receives the print-ready files directly into their printing press.

To achieve aims and objectives the present invention provides a method allowing a customer to a printing service provider to create a PDF document at the site of the customer through a computerized interface. The customer thereafter sends the PDF document to the service provider through a network for data-communication, whereby the service provider directs the PDF document to a suitable printing office through a network for data-communication, comprising:

that a PDF engine creating documents uses two XML files to create a customer PDF document for printing on demand;

one XML file comprises the data and it's typing for printing which is created by the customer through said interface;

the other XML file comprises a description of how said data can be positioned and formatted, in a created document by the customer through said interface;

said PDF engine generating said document through providing a new structure by analyzing the two XML files, while analyzing merging data and formatting information; and

5 thus making it possible to create a PDF document with a distinct difference between data to be printed and the design of the PDF document.

In one embodiment of the method according to the present invention, high-resolution images, fonts and color definitions are embedded in the PDF document and an arbitrary printing office can be used for online printing.

10 In other embodiments of the method according to the present invention, the design XML describes the layout of the whole PDF document, a questionnaire based on non-static, variable, text elements in the design XML file is created and every non-static text element in the design XML file has a reference to data in the data XML file.

The present invention further sets forth a system allowing a customer to a printing service provider to create a PDF document at the site of the customer through a computerized interface. The customer thereafter sends the PDF document to the service provider through a network for data-communication, whereby the service provider directs the PDF document to a suitable printing office through a network for data-communication, comprising:

15 that a PDF engine means creating documents uses two XML files to create a customer PDF document for printing on demand;

one XML file comprises the data and it's typing for printing which is created by the customer through said interface;

the other XML file comprises a description of how said data can be positioned and formatted, in a created document by the customer through said interface;

25 said PDF engine means generating said document through providing a new structure by analyzing the two XML files, while analyzing merging data and formatting information; and

thus making it possible to create a PDF document with a distinct difference between data to be printed and the design of the PDF document.

30 In one embodiment of the system according to the present invention, high-resolution images, fonts and color definitions are embedded in the PDF document and an arbitrary printing office can be used for online printing.

In other embodiments of the system according to the present invention, the design XML describes the layout of the whole PDF document, a questionnaire based on non-static,

variable, text elements in the design XML file is created and every non-static text element in the design XML file has a reference to data in the data XML file.

XML (EXtensible Markup Language) is an open standard for describing data from the W3C, world-wide-web consortium. It is used for defining data elements on a web page and business-to-business documents. It uses a similar tag structure as HTML; however, whereas HTML defines how elements are displayed, XML defines what those elements contain. HTML uses predefined tags, but XML allows tags to be defined by the developer of the page. Thus, virtually any data items, such as product, sales rep and amount due, can be identified, allowing web pages to function like database records.

10

Brief description of the drawings

Henceforth reference is had to the attached figures and table for a better understanding of the present invention and its examples and embodiments, wherein:

Fig. 1 illustrates one embodiment of a flow chart for system preparation and product generation, leading to a customised printed product according to the present invention.

15

Fig. 2 illustrates possible online interactions between customer, printing service provider and print shop, leading to a delivered and paid printed product.

Table

The table illustrates examples of design XML definitions according to the present invention.

20

Detailed description of preferred embodiments

The present invention sets forth a method and a system for creating and ordering customised material for printing, wherein each customer can create, modify, proof, procure and manage their printed material from their desktop computer.

25

Fig. 1 schematically illustrates how a user preferably via his/her computer connects, logs on, to a printing service provider on a network for data-communication, like an Internet site, where he/she might have a password-protected account, and where he/she interacts with the printing service provider for creating and ordering customised printed material.

30

The printing service provider has created example- and/or template PDF files 110, which are user specific meaning that all information needed for creating said PDF files are provided by each user online. The template PDF file only contains the elements that are to be

static in a print-ready document. This could be data that mostly refers to layout and not, for example, data referring to name and telephone number on a business card.

The example PDF file contains all the data needed in a print-ready document for end use and is with a program that analysis the layout and design of the example PDF file, used to
5 generate the design XML file 120, in which all data elements are identified and their individual positions registered, specifying which element data that are to be dynamic, variable, and which to be static, not variable. Necessary changes can thereafter also manually be made to the design XML file, for further customisation. The design XML file thus describes the layout of the whole PDF document containing information about where data is
10 to be placed and how it is formatted.

The design XML file can describe whole or part of a print-ready document and if the XML file only describes the pure dynamic part of a document, a template PDF file is needed to define the documents static part.

The design XML file, "product", can however also be manually created from scratch
15 directly online the printing service providers website 100, either by an end user himself/herself or by the printing service provider. See example of a design XML file below.

The "product", which either constitutes the design XML file and template PDF file together or the design XML file alone, is then named and connected to the system 140, i.e. made available for the user online.

20 When a user logs on to a printing service provider on a network for data-communication 150, for example an Internet website, he/she can choose "product" and "content", data XML file, or create a new "content", data XML file, based on the "product" 160.

A data XML-file contains the content, dynamic data, to be placed on the "product".
25 The creation of the data XML file, or product content, is done by user input. When a user for the first time enters the system, logs on, there is no previous "content". A questionnaire based on the non-static, dynamic, text elements in the design XML file is then created. When data is entered and stored the user has access to this for any later session.

The data XML file explicitly contains data and its type. The typing of data means
30 that the any text is associated with a type. This enables the extraction and insertion of data in a content specific way. If the data XML file for a specific user contains the entry "+46 8 748 84 33", this entry is also marked with the content "Telephone number". If the user wishes to change this, the system can present a question specifying for a new telephone number and not an undefined data. See example of a data XML file below.

The design XML file is then merged with the data XML file in a PDF-engine, which analyses both XML files, combines them, and generates a print-ready PDF document file, specific for the current user 170. Every non-static, i.e. dynamic, TXTELEM, text element, in the design XML file has a reference to data in the data XML file. This reference is named in the “description” attribute of the TXTELEM in the table below.

The two XML files define all documents that are created by the PDF-engine. The first of these, the design XML, contains information about how the document is constructed. The other, data XML, contains the user specific data that is to be inserted in the document. The PDF format does not differentiate content and data. With this XML solution the data is separated from content, something that earlier has been unheard of in PDF contexts.

A user at the front end, via his/her computer screen, can then online the printing service providers website preview a print-ready PDF document and/or it can be proof-printed at the front end on his/her local printer for closer manual inspection 180. If a user is satisfied with the result, he/she can approve the PDF and request a print-order for the PDF online the printing service providers website. If a user is not satisfied he/she can return to choosing a new “product” and/or “content” 160 and repeat the steps above until a satisfactory result is reached.

After approval of the print-ready PDF document, a user can either choose to order one more product 190, i.e. return to choosing a new “product” and/or “content” 160 or he/she can send print orders for the approved PDF document/documents 200.

The printing service provider can then direct the print-ready PDF document file to a suitable print shop, or the like, through a network for data-communication, like the Internet. High-resolution images, fonts and color definitions are embedded in the PDF document, PDF technology is used through all points of the workflow, and the printing service provider is therefore not restricted to certain print shops with access to databases containing such information. Their solution is stand-alone and they are therefore not limited, to sending print orders only to print shops connected to their system, but can send print orders to arbitrary print shops.

The customers can also follow up on their orders, online, until final delivery.

Fig. 2 schematically illustrates possible online interactions between customer, printing service provider and printer, print shop, leading to a delivered and paid printed product.

Example of a data XML file:

```

<?xml version="1.0" encoding="UTF-16"?>
<CUSTOMERDATA>
    <Förnamn>Kalle</Förnamn>
    <Efternamn>Andersson</Efternamn>
5    <Titel>System Engineer</Titel>
    <Telefon>406 62 03</Telefon>
    <Mobil>736 82 10 28</Mobil>
    <Epost>emil.breding</Efternamn>
10 </CUSTOMERDATA>

```

Example of a design XML file:

```

15 <?xml version="1.0" encoding="UTF-16"?>
    <PRODUCT imposement="0">
        <PAGE pageNo="1">
            <ROWELEM alignment="right" flipX="false" flipY="false"
posX="232" posY="75" rotation="0">
                <TXTELEM color="0 0 0 1 k" cs="0" description="Förnamn"
20 flipX="false" flipY="false" font="ArialMT" size="12" static="false"
ws="0"></TXTELEM>
                <SPACEELEM>4</SPACEELEM>
                <TXTELEM color="0 0 0 1 k" cs="0" description="Efternamn"
flipX="false" flipY="false" font="ArialMT" size="12" static="false"
25 ws="0"></TXTELEM></ROWELEM>
                <ROWELEM alignment="right" flipX="false" flipY="false"
posX="232" posY="65" rotation="0">
                    <TXTELEM color="0 0 0 1 k" cs="0" description="Titel"
flipX="false" flipY="false" font="ArialMT" size="7" static="false"
30 ws="0">
                        <OPTION>System Engineer</OPTION>
                        <OPTION>Marketing Director</OPTION>
                        <OPTION>Managing Director</OPTION>
                        <OPTION>Project Manager</OPTION>
35 <OPTION>Information Manager</OPTION></TXTELEM></ROWELEM>
                    <ROWELEM alignment="right" flipX="false" flipY="false"
posX="232" posY="49" rotation="0">
                        <TXTELEM color="0 0 0 1 k" cs="0" description="Gata_stat"
flipX="false" flipY="false" font="ArialMT" size="7" static="true"
40 ws="0">Tegnérsgatan 35</TXTELEM></ROWELEM>
                    <ROWELEM alignment="right" flipX="false" flipY="false"
posX="232" posY="31" rotation="0">
                        <TXTELEM color="0 0 0 1 k" cs="0" description="Telefon_stat"
flipX="false" flipY="false" font="ArialMT" size="7" static="true"
45 ws="0">phone +46- (0) 8-</TXTELEM>
                        <TXTELEM color="0 0 0 1 k" cs="0" description="Telefon"
flipX="false" flipY="false" font="ArialMT" size="7" static="false"
ws="0"></TXTELEM></ROWELEM>
                    <ROWELEM alignment="right" flipX="false" flipY="false"
50 posX="232" posY="22" rotation="0">
                        <TXTELEM color="0 0 0 1 k" cs="0" description="Mobil_stat"
flipX="false" flipY="false" font="ArialMT" size="7" static="true"
ws="0">mobile +46- (0) </TXTELEM>
                        <TXTELEM color="0 0 0 1 k" cs="0" description="Mobil"
55 flipX="false" flipY="false" font="ArialMT" size="7" static="false"
ws="0"></TXTELEM></ROWELEM>

```



```

      <ROWELEM      alignment="right"      flipX="false"      flipY="false"
posX="232" posY="13" rotation="0">
      <TXTELEM      color="0 0 0 1 k"      cs="0"      description="Epost"
flipX="false" flipY="false" font="ArialMT" size="7" static="false"
5 ws="0"></TXTELEM>
      <TXTELEM      color="0 0 0 1 k"      cs="0"      description="Epost_stat"
flipX="false" flipY="false" font="ArialMT" size="7" static="true"
ws="0">@printon.com</TXTELEM></ROWELEM>
      <ROWELEM      alignment="right"      flipX="false"      flipY="false"
10 posX="232" posY="40" rotation="0">
      <TXTELEM      color="0 0 0 1 k"      cs="0"      description="Post_stat"
flipX="false" flipY="false" font="ArialMT" size="7" static="true"
ws="0">111 61 Stockholm, Sweden</TXTELEM></ROWELEM>
      </PAGE>
15 </PRODUCT>

```

Means mentioned in the present description can be software means, hardware means or a combination of both.

The present invention has been described with non-limiting examples and
 20 embodiments. It is the attached set of claims that describe all possible embodiments for a person skilled in the art.

Table showing examples of design XML definitions:

Element tag	Attribute	Description
PRODUCT	templatePressFile	If template exists this is a file reference to the press template.
	templatePreviewFile	If template exists this is a file reference to the preview template.
	resourceFile	This is a file reference to fonts and colours used to create the finished product.
	imposement	The imposition of the file sent to press.
PAGE	pageNo	Defines at what page the following rows are placed in.
ROWELEM	PosX	Position in X axis
	PosY	Position in Y axis
	Rotation	Rotation in degrees.
	FlipX	True if the row is to be flipped X wise.
	FlipY	True if the row is to be flipped Y wise.
TXTELEM	Alignment	Right, left or center
	Color	Color of text
	Cs	Character spacing
	Ws	Word spacing
	FlipX	True if the row is to be flipped X wise.
	FlipY	True if the row is to be flipped Y wise.
	Font	Font for text
	Size	Font size
	Static	True if user will not be able to change the value of this TXTELEM
	Description	This is the reference to the data XML.

Claims

1. A method allowing a customer to a printing service provider to create a PDF document at the site of the customer through a computerized interface and sending the PDF document to the service provider through a network for data-communication, whereby the
5 service provider directs the PDF document to a suitable printing office through a network for data-communication, comprising:

that a PDF engine creating documents uses two XML files to create a customer PDF document for printing on demand;

one XML file comprises the data and it's typing for printing which is created by the
10 customer through said interface;

the other XML file comprises a description of how said data can be positioned and formatted, in a created document by the customer through said interface;

said PDF engine generating said document through providing a new structure by analyzing the two XML files, while analyzing merging data and formatting information; and
15 thus making it possible to create a PDF document with a distinct difference between data to be printed and the design of the PDF document.

2. A method according to claim 1, wherein high-resolution images, fonts and color definitions are embedded in the PDF document.

3. A method according to claim 1-2, wherein it provides that an arbitrary printing
20 office can be used for online printing.

4. A method according to claim 1-3, wherein the design XML describes the layout of the whole PDF document.

5. A method according to claim 1-4, wherein a questionnaire based on non-static text elements in the design XML file, is created.

25 6. A method according to claim 1-5, wherein every non-static text element in the design XML file has a reference to data in the data XML file.

7. A system allowing a customer to a printing service provider to create a PDF document at the site of the customer through a computerized interface and sending the PDF document to the service provider through a network for data-communication, whereby the
30 service provider directs the PDF document to a suitable printing office through a network for data-communication, comprising:

that a PDF engine means creating documents uses two XML files to create a customer PDF document for printing on demand;

one XML file comprises the data and it's typing for printing which is created by the customer through said interface;

the other XML file comprises a description of how said data can be positioned and formatted, in a created document by the customer through said interface;

5 said PDF engine means generating said document through providing a new structure by analyzing the two XML files, while analyzing merging data and formatting information; and

thus making it possible to create a PDF document with a distinct difference between data to be printed and the design of the PDF document.

10 8. A system according to claim 7, wherein high-resolution images, fonts and color definitions are embedded in the PDF document.

9. A system according to claim 7-8, wherein it provides that an arbitrary printing office can be used for online printing.

15 10. A system according to claim 7-9, wherein the design XML describes the layout of the whole PDF document.

11. A system according to claim 7-10, wherein a questionnaire based on non-static text elements in the design XML file, is created.

12. A system according to claim 7-11, wherein every non-static text element in the design XML file has a reference to data in the data XML file.

20 -----

25

30

1/2

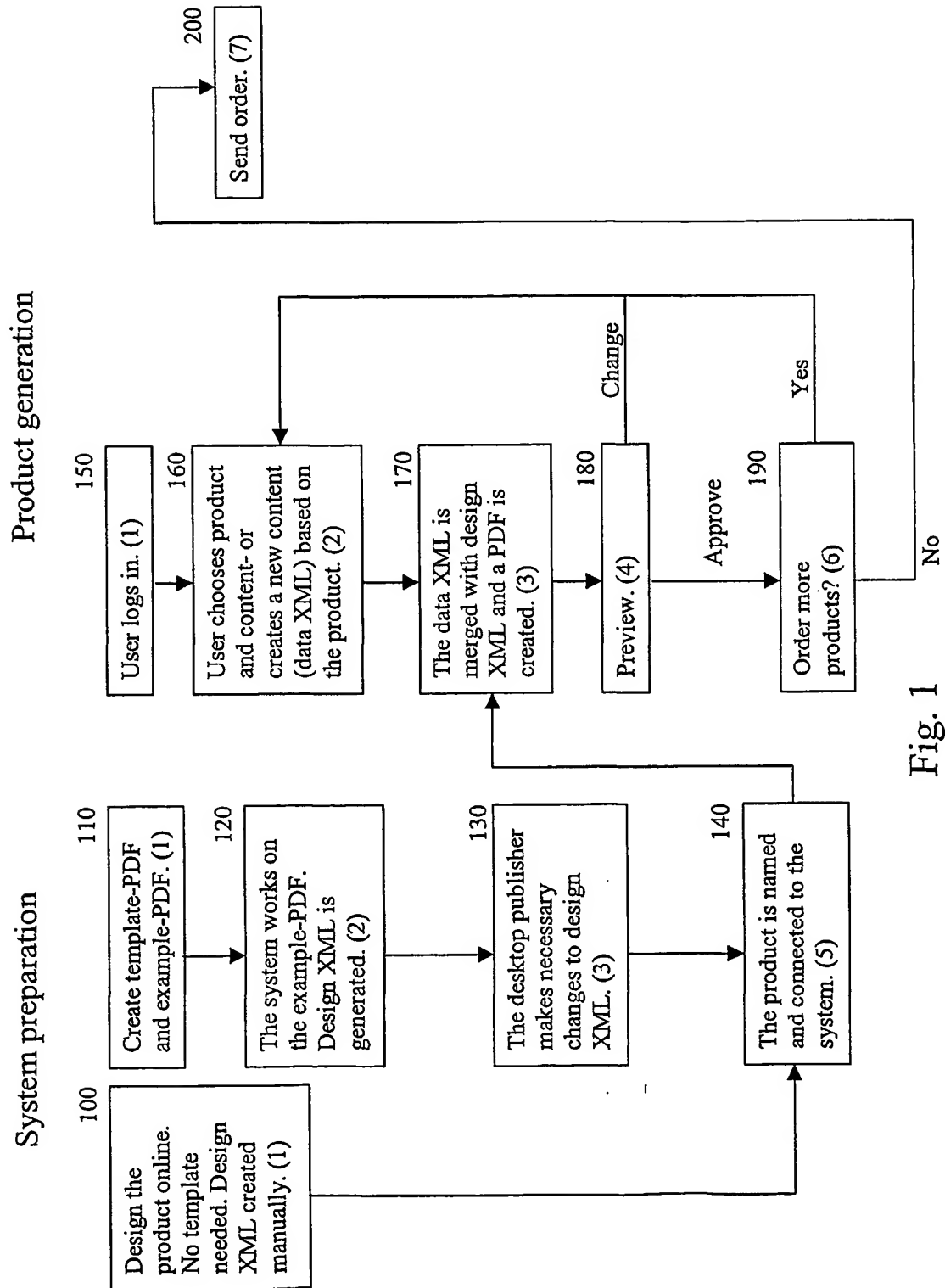
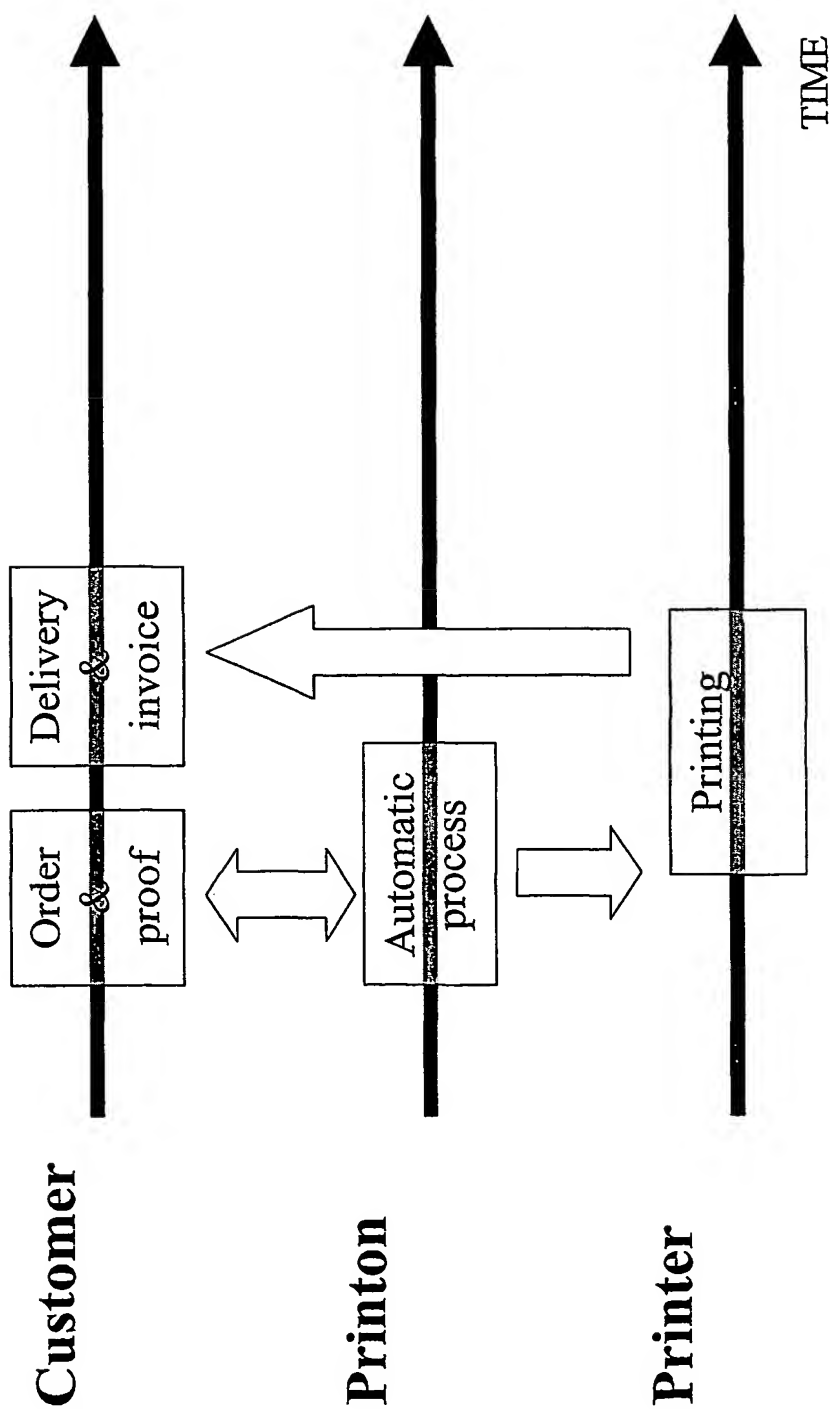


Fig. 1

2/2



Throughput time: 8 hours – 3 days

Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/01389

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 17/21, G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9808176 A1 (MOORE BUSINESS FORMS, INC.), 26 February 1998 (26.02.98) --	1-12
A	EP 0782068 A1 (DELUXE CORPORATION), 2 July 1997 (02.07.97) --	1-12
A	EP 0837401 A2 (SCITEX DIGITAL PRINTING, INC.), 22 April 1998 (22.04.98) --	1-12
A	US 5303342 A (EDGE, C.J.), 12 April 1994 (12.04.94) -- -----	1-12

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

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17-10-2001

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INTERNATIONAL SEARCH REPORT
Information on patent family members

01/10/01

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Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9808176	A1	26/02/98	AU	722766 B	10/08/00
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